A critical appraisal of "Anterior Cruciate Ligament Injury—Who Succeeds Without Reconstructive Surgery?"

By

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In partial fulfillment of the

requirements for the course:

PT 7240 Evidence-Based Practice in Physical Therapy

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November, 2019

Abstract

This study was designed to look at predictors of successful outcomes for individuals with an anterior cruciate ligament (ACL) tear after 2 years of conservative treatment. There was also an effort to look at the changes in these predictions after an initial 5-week rehab program. Patients from the Delaware-Oslo ACL Cohort Study who had not undergone late stage ACL reconstruction were used. Inclusion criteria to be admitted into the study included unilateral ACL tear, age between 13 and 60 years old, participation prior to injury in pivoting sports. Patients were excluded if they had any prior knee injuries to either knee, or any other injury that would limit their ability to complete the initial 5-week neuromuscular strength training rehab program. Results of this study showed that just over 50% of patients had successful outcomes. Based on the different tests done to assess effectiveness, being female, older in age, and performing better on the single leg hop test were all predictive of successful 2-year outcomes.

Key words

Anterior cruciate ligament; conservative treatment; outcomes

Introduction

This critical appraisal is designed to investigate nonsurgical ACL rehab. This study gives good insight into the effectiveness of conservative treatment on patients with ACL injuries. It provides data that can be directly translated to a more accurate prognosis, as well as objective measures to help determine the effectiveness and probability of a positive outcome for clinicians treating patients who choose conservative measures for their ACL injuries. It also provides research supporting physical therapy interventions for treating these kinds of injuries and supporting our ability as clinicians in being able to have the best chance to help patients fully recover without surgery. All of this information helps to answer my clinical question; does strength training benefit ACL patients who choose conservative methods versus those who choose surgery?

Methods

The initial stages of this critical appraisal began with a clinical question, which in turn led to a literature search in order to find studies that provided relevant information to answer the question. Two databases were used including NCBI (PubMed) and the Physiotherapy Evidence Database (PEDro). Both databases are credible sources with a number of quality articles to utilize when looking for research related to the field of physical therapy. When it came to finding articles related specifically to the clinical question, I chose to use search terms such as “ACL tear strength training” and “ACL tear conservative methods”. Along with the search terms, a limit was placed on the search results in order to limit the articles to being published within the last 5 years. This provides more recent research findings which provides more relevant and up to date data. The number of articles that were found prior to deciding on the one used for this appraisal, ended up being close 20.

I chose this article based on its ability to effectively answer my clinical question. This

article was published in the Orthopaedic Journal of Sports Medicine, which is a peer reviewed journal for researchers and clinicians which adds a level of credibility to this journal. When looking directly at this study there are a few aspects that help make this study worth reading. The authors of this particular study are a group of doctorate level physical therapists conducting research in two separate locations. One group in the state of Delaware in the United States and then the other group is located in Oslo, Norway. This study also used instruments and interventions that are valid and reliable with gathering accurate data. Lastly, this study was able to conduct measurements and collect data over a 2-year period. This allowed adequate time to collect follow-up data to assess data and establish outcome measures for these patients.

Results

Summary of the study

This study was designed to look at predictors of successful outcomes for individuals with an ACL tear after 2 years of conservative treatment. There was also an effort to look at the changes in these predictions after an initial 5-week rehab program. This study gives good insight to the effectiveness of conservative treatment on patients with ACL injuries. It provides data that can be directly translated to a more accurate prognosis, as well as objective measures to help determine the effectiveness and probability of a positive outcome for clinicians treating patients who choose conservative measures for their ACL injuries.

Appraisal of the study introduction

The introduction is comprehensive while also being clear and concise in its message. It clearly relates to the topic and provides background information on ACL success rates for those

who choose surgical options as well as those who choose conservative measures. It also does a good job outlining some of the goals of this study and how these goals would be achieved.

One aspect of the introduction that could have been improved is there could have been information provided about prior research that had been conducted on the topic of conservative treatments for ACL injuries.

Appraisal of the study methods

The methods used to conduct this study were able to provide quality data to the researchers. Being able to have nearly 100 subjects go through with the full two-year program provided a good sample size for the researchers to analyze the data and come up with appropriate conclusions for their conservative treatment protocol. The subjects were also screened and provided a preliminary rehab phase to ensure adequate ROM, muscle strength, absence of other current or previous contralateral knee injuries, prior participation in certain level of sport prior to injury. All of these were used to confirm the subject's ability to complete a 5-week standardized strength training rehab program.

There were some weaknesses of this study as well. Initial subject enrollment was 300 individuals but after a 6 month follow up that number dropped to 118 because of subjects choosing to continue with surgical intervention for their ACL injury. Subsequently, by the 2 year follow up that number lessened to 97 due to subjects either being unwilling to continue to participate in the study or being unable to be contacted. This amount of attrition could provide skewed results on the data specific to the success of conservative measures. Also, there was no blinding protocol in this study. Subjects were all placed into a large group, and the researchers were aware of each subject's abilities and baseline performance data.

Appraisal of the study results

The results section is well written as it provides adequate data directly related to the questions presented in the paper. Data is provided regarding the successfulness of the conservative treatments as well as how many subjects chose to go through with surgery during the 2 year follow up. They also provide information related to the predictors and how those predictors correlate to the successfulness of the conservative treatment as it was discussed in the introduction and procedures of this study.

One part of the results that could have been improved is how the data was formatted. The tables and figures that are presented are very complete in providing all the relevant information needed. However, the amount of data looks to be a bit overwhelming and can be confusing to navigate at times.

Appraisal of the study discussion

The authors went into much further detail in the discussion than in the results. They were able to take the data and discuss its clinical applicability and its role in deciding treatment for patients. They also discussed timing of the assessment, how to define a successful outcome, the differences in functional testing between Delaware and Oslo sites and the strengths and limitations of the study.

One weakness of this section of the article was that there was no future study discussed in order to further validate their findings.

Discussion

This study gives good insight into the effectiveness of conservative treatment on patients with ACL injuries. It provides data that can be directly translated to a more accurate prognosis,

as well as objective measures to help determine the effectiveness and probability of a positive outcome for clinicians treating patients who choose conservative measures for their ACL injuries. It also provides research supporting physical therapy interventions for treating these kinds of injuries and supporting our ability as clinicians in being able to have the best chance to help patients fully recover.

The utilization of a 5-week neuromuscular strength training program along with continued conservative treatments over the duration of a 2-year period provided positive outcomes for those subjects who chose non-surgical treatment. Using this type of intervention allows for the patient to regain strength and work on proper proprioceptive control of their involved limb. One risk to consider is making sure that as a clinician you are equipped with the tools and knowledge to properly progress your patient appropriately through this type of rehab program. Inability to progress properly could result in further injury or unwillingness to continue with therapy by the patient because of exacerbation of symptoms related to pain or instability of the injured leg. I believe this sort of intervention can be valuable for subjects who want to avoid surgery, however it requires a therapist who is well versed in ACL rehab and appropriate strength training programming and progressions in order to provide the patient with the best care.

This study utilized valid research methods which resulted in reliable data that could be applied to the clinical setting. Due to this, I would be confident in using this evidence with a future patient in order to provide education and when implementing interventions to have the best chance at a positive outcome. Personally, I would feel comfortable implementing this type of intervention because of my personal background in strength training and having the experience with effectively programming for both athletes and people of the general population.

As I continue to develop my skills and knowledge base, I have full confidence that I would be able to implement an intervention like the one presented in this study.

This study provides a more in depth look at the successfulness of conservative treatment options for patients with ACL injuries. It provides information to help develop a more accurate prognosis. The use of objective measures helped researchers determine the probability of a positive outcome for this type of intervention. This helps to establish a framework for clinicians treating those patients who have chosen conservative measures for their ACL injuries. It also provides quality research supporting physical therapy interventions for treating these kinds of injuries and supporting our ability as clinicians in being able to have the best chance to help patients recover. Ultimately, this study helps to establish effective interventions for clinicians all over the world treating individuals conservatively with ACL injuries.